



# SEQUENCE LISTING

<110> Pharmacia & Upjohn

<120> Novel Vitamin D Receptor Related Polypeptides, Nucleic Acid Sequence Encoding the Same and Uses Thereof

<130> 10806-65

<140> US 09/143,828

<141> 1998-08-31

<160> 4

<170> PatentIn Ver. 2.0

<210> 1

<211> 2905

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: [cDNA of encoding sequence of vitamin D receptor related gamma (VDRRg)]

<400> 1

```
cctctgaagg ttctagaatc gatagtgaat tcgtgggacg ggaagaggaa gcactgcctt 60
tacttcagtg ggaatctcgg cctcagcctg caagccaagt gttcacagtg aaaaaagcaa 120
gagaataagc taataactct gtctgaaca aggcagcggc tccttggtta agctactcct 180
tgatcgatcc tttgcaccgg attgttcaaa gtggacccca ggggagaagt cggagcaaag 240
aacttaccac caagcagtc c aagaggccca gaagcaaacc tggaggtgag acccaaagaa 300
agctggaacc atgctgactt tgtacactgt gaggacacag agtctgttcc tggaaagccc 360
agtgtcaacg cagatgagga agtcggagggt ccccaaactt gccgtgtatg tggggacaag 420
gccactggct atcacttcaa tgtcatgaca tgtgaaggat gcaagggtt tttcaggagg 480
gccatgaaac gcaacgccc gctgagggtgc cccttcgga agggcgctg cgagatcacc 540
cggaagaccc ggcgacagtg ccaggcctgc cgcctgcgca agtgcttggg gagcggtatg 600
aagaaggaga tgatcatgtc cgacgaggcc gtggaggaga ggcgggcctt gatcaagcgg 660
aagaaaagtg aacggacagg gactcagcca ctgggagtg aggggctgac agaggagcag 720
cgatgatga tcaggagct gatggacgct cagatgaaaa cctttgacac taccttctcc 780
catttcaaga atttccggct gccaggggtg cttagcagtg gctgcgagtt gccagagtct 840
ctgcaggccc catcgaggga agaagctgcc aagtggagcc aggtccggaa agatctgtgc 900
tctttgaagg tctctctgca gctgcggggg gaggatggca gtgtctggaa ctacaaaccc 960
ccagccgaca gtggcgggaa agagatcttc tccctgctgc cccacatggc tgacatgtca 1020
acctacatgt tcaaaggcat catcagcttt gccaaagtca tctcctactt cagggacttg 1080
cccatcgagg accagatctc cctgctgaag gggccgctt tcgagctgtg tcaactgaga 1140
ttcaacacag tggtcaacgc ggagactgga acctgggagt gtggccggct gtcctactgc 1200
ttggaagaca ctgcagggtg cttccagcaa cttctactgg agcccatgct gaaattccac 1260
```

tacatgctga agaagctgca gctgcatgag gaggagtatg tgctgatgca ggccatctcc 1320  
ctcttctccc cagaccgccc aggtgtgctg cagcaccgcg tggaggacca gctgcaggag 1380  
caattcgcca ttactctgaa gtccctacatt gaatgcaatc ggccccagcc tgctcatagg 1440  
ttcttgttcc tgaagatcat ggctatgctc accgagctcc gcagcatcaa tgctcagcac 1500  
accagcggc tgctgcgcat ccaggacata caccctttg ctacgcccct catgcaggag 1560  
ttgttcggca tcacaggtag ctgagcggct gcccttgggt gacacctccg agaggcagcc 1620  
agaccagag ccctctgagc cgccactccc gggccaagac agatggacac tgccaagagc 1680  
cgacaatgcc ctgctggcct gtctccctag ggaattcctg ctatgacagc tggctagcat 1740  
tcctcaggaa ggacatgggt gccccccacc ccagttcag tctgtaggga gtgaagccac 1800  
agactcttac gtggagagtg cactgacctg taggtcagga ccatcagaga ggcaagggtg 1860  
ccctttcctt ttaaaaggcc ctgtggtctg gggagaaatc cctcagatcc cactaaagtg 1920  
tcaagggtgtg gaagggacca agcgaccaag gataggccat ctggggtcta tgcccacata 1980  
cccacgtttg ttcgcttctt gagtcttttc attgctacct ctaatagtcc tgtctccac 2040  
ttccactcg ttccctcct cttccgagct gcttgtggg ctcaaggcct gtactcatcg 2100  
gcagggtgcat gagtatctgt gggagtcctc tagagagatg agaagccagg aggctgcac 2160  
caaagtgcag aagcttgcca tgacctcatt ccggccacat cattctgtgt ctctgcatcc 2220  
atttgaacac attattaagc actgataata ggtagcctgc tgtggggtat acagcattga 2280  
ctcagatata gatcctgagc tcacagagtt tatagttaaa aaaacaaaca gaaacacaaa 2340  
caatttgat caaaaggaga aaatgataag tgacaaaagc agcacaagga atttccctgt 2400  
gtggatgctg agctgtgatg gcaggcactg ggtaccacaag tgaagggtcc cgaggacatg 2460  
agtctgtagg agcaagggca caaactgcag ctgtgagtgc gtgtgtgtga tttggtgtg 2520  
gtaggctctgt ttgccacttg atggggcctg ggttgttcc tggggctgga atgctgggtg 2580  
tgctctgtga caaggctacg ctgacaatca gttaaacaca ccggagaaga accatttaca 2640  
tgcaccttat atttctgtgt acacatctat tctcaaagct aaagggtatg aaagtgcctg 2700  
ccttgtttat agccacttgt gagtaaaaaat ttttttgcac tttcacaat tatactttat 2760  
ataaggcatt ccacacctaa gaactagttt tgggaaatgt agccctgggt ttaatgtcaa 2820  
atcaaggcaa aaggaattaa ataatgtact tttggctaaa aaaaaaaaaa aaaaaaaaaa 2880  
aaaaaaaaa aaaaaaaaaa aaaaaa 2905

<210> 2

<211> 434

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: [Deduced amino  
acid sequence of vitamin D receptor related gamma  
(VDRRg)]

<400> 2

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Glu | Val | Arg | Pro | Lys | Glu | Ser | Trp | Asn | His | Ala | Asp | Phe | Val | His |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cys | Glu | Asp | Thr | Glu | Ser | Val | Pro | Gly | Lys | Pro | Ser | Val | Asn | Ala | Asp |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     | 20  |     |     |     |     |     | 25  |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Glu | Val | Gly | Gly | Pro | Gln | Ile | Cys | Arg | Val | Cys | Gly | Asp | Lys | Ala |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|     |     |     | 35  |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

Thr Gly Tyr His Phe Asn Val Met Thr Cys Glu Gly Cys Lys Gly Phe  
 50 55 60

Phe Arg Arg Ala Met Lys Arg Asn Ala Arg Leu Arg Cys Pro Phe Arg  
 65 70 75 80

Lys Gly Ala Cys Glu Ile Thr Arg Lys Thr Arg Arg Gln Cys Gln Ala  
 85 90 95

Cys Arg Leu Arg Lys Cys Leu Glu Ser Gly Met Lys Lys Glu Met Ile  
 100 105 110

Met Ser Asp Glu Ala Val Glu Glu Arg Arg Ala Leu Ile Lys Arg Lys  
 115 120 125

Lys Ser Glu Arg Thr Gly Thr Gln Pro Leu Gly Val Gln Gly Leu Thr  
 130 135 140

Glu Glu Gln Arg Met Met Ile Arg Glu Leu Met Asp Ala Gln Met Lys  
 145 150 155 160

Thr Phe Asp Thr Thr Phe Ser His Phe Lys Asn Phe Arg Leu Pro Gly  
 165 170 175

Val Leu Ser Ser Gly Cys Glu Leu Pro Glu Ser Leu Gln Ala Pro Ser  
 180 185 190

Arg Glu Glu Ala Ala Lys Trp Ser Gln Val Arg Lys Asp Leu Cys Ser  
 195 200 205

Leu Lys Val Ser Leu Gln Leu Arg Gly Glu Asp Gly Ser Val Trp Asn  
 210 215 220

Tyr Lys Pro Pro Ala Asp Ser Gly Gly Lys Glu Ile Phe Ser Leu Leu  
 225 230 235 240

Pro His Met Ala Asp Met Ser Thr Tyr Met Phe Lys Gly Ile Ile Ser  
 245 250 255

Phe Ala Lys Val Ile Ser Tyr Phe Arg Asp Leu Pro Ile Glu Asp Gln  
 260 265 270

Ile Ser Leu Leu Lys Gly Ala Ala Phe Glu Leu Cys Gln Leu Arg Phe  
 275 280 285

Asn Thr Val Phe Asn Ala Glu Thr Gly Thr Trp Glu Cys Gly Arg Leu  
 290 295 300

Ser Tyr Cys Leu Glu Asp Thr Ala Gly Gly Phe Gln Gln Leu Leu Leu  
 305 310 315 320

Glu Pro Met Leu Lys Phe His Tyr Met Leu Lys Lys Leu Gln Leu His  
 325 330 335

Glu Glu Glu Tyr Val Leu Met Gln Ala Ile Ser Leu Phe Ser Pro Asp  
 340 345 350

Arg Pro Gly Val Leu Gln His Arg Val Val Asp Gln Leu Gln Glu Gln  
 355 360 365

Phe Ala Ile Thr Leu Lys Ser Tyr Ile Glu Cys Asn Arg Pro Gln Pro  
 370 375 380

Ala His Arg Phe Leu Phe Leu Lys Ile Met Ala Met Leu Thr Glu Leu  
 385 390 395 400

Arg Ser Ile Asn Ala Gln His Thr Gln Arg Leu Leu Arg Ile Gln Asp  
 405 410 415

Ile His Pro Phe Ala Thr Pro Leu Met Gln Glu Leu Phe Gly Ile Thr  
 420 425 430

Gly Ser

<210> 3

<211> 2802

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: [cDNA of  
 encoding sequence of vitamin D receptor related  
 gamma-2 (VDRRg-2)]

<400> 3

tgaattcgtg ggctgtctgg gttagtgtctg gcagcccccc tgaggccaag gacagcagca 60  
 tgacagtcac caggactcac cacttcaagg aggggtccct cagagcacct gccatacccc 120  
 tgcacagtgc tgcggctgag ttggcttcaa accatccaag agggccagaa gcaaacctgg 180  
 aggtgagacc caaagaaagc tggaaccatg ctgactttgt aactgtgag gacacagagt 240  
 ctgttccttg aaagcccagt gtcaacgcag atgaggaagt cggagggtccc caaatctgcc 300  
 gtgtatgtgg ggacaaggcc actggctatc acttcaatgt catgacatgt gaaggatgca 360  
 agggcttttt caggagggcc atgaaacgca acgcccggct gaggtgcccc ttccggaagg 420  
 gcgcctgcga gatcaccgga aagacccggc gacagtgcca ggctgtccgc ctgcgcaagt 480

```

gcctggagag cggcatgaag aaggagatga tcatgtccga cgaggccgtg gaggagaggc 540
gggccttgat caagcggaag aaaagtgaac ggacagggac tcagccactg ggagtgcagg 600
ggctgacaga ggagcagcgg atgatgatca gggagctgat ggacgctcag atgaaaacct 660
ttgacactac cttctcccat ttcaagaatt tccggtgcc aggggtgctt agcagtggct 720
gcgagttgcc agagtctctg caggcccat cgagggaaga agctgccaag tggagccagg 780
tccgaaaaga tctgtgctct ttgaaggctt ctctgcagct gcggggggag gatggcagg 840
tctggaacta caaaccccca gccgacagtg gcgggaaaga gatcttctcc ctgctgcccc 900
acatggctga catgtcaacc tacatgttca aaggcatcat cagctttgcc aaagtcactt 960
cctacttcag ggacttgccc atcgaggacc agatctccct gctgaagggg gccgctttcg 1020
agctgtgtca actgagattc aacacagtgt tcaacgcgga gactggaacc tgggagtgtg 1080
gccggtgtc ctactgcttg gaagacactg caggtggctt ccagcaactt ctactggagc 1140
ccatgctgaa attccactac atgctgaaga agctgcagct gcatgaggag gagtatgtgc 1200
tgatgcaggc catctccctc ttctccccag accgccagg tgtgctgcag caccgcgtgg 1260
tggaccagct gcaggagcaa ttcgccatta ctctgaagtc ctacattgaa tgcaatcggc 1320
cccagcctgc tcataggttc ttgttctga agatcatggc tatgctcacc gagctccgca 1380
gcatcaatgc tcagcacacc cagcggctgc tgcgcattca ggacatacac ccctttgcta 1440
cgccctcat gcaggagttg ttcgcatca caggtagctg agcggctgcc cttgggtgac 1500
acctccgaga ggcagccaga cccagagccc tctgagccgc cactcccggg ccaagacaga 1560
tggacactgc caagagccga caatgccctg ctggcctgtc tccctagga attcctgcta 1620
tgacagctgg ctagcattcc tcaggaagga catgggtgcc cccaccccc agttcagtct 1680
gtaggagtg aagccacaga ctcttacgtg gagagtgcac tgacctgtag gtcaggacca 1740
tcagagaggc aaggttgccc ttctcttta aaaggccctg tggctctggg agaaatccct 1800
cagatccac taaagtgtca aggtgtggaa gggaccaagc gaccaaggat aggccatctg 1860
gggtctatgc ccacataccc acgtttgttc gcttctgag tcttttcatt gctacctcta 1920
atagtcctgt ctcccacttc ccaactcgtt cctcctctt ccgagctgct ttgtgggctc 1980
aaggcctgta ctcatcgga ggtgcatgag tatctgtggg agtcctctag agagatgaga 2040
agccaggagg cctgcacaa atgtcagaag cttggcatga cctcattccg gccacatcat 2100
tctgtgtctc tgcattccatt tgaacacatt attaagcact gataataggt agcctgctgt 2160
ggggtatata gcattgactc agatatagat cctgagctca cagagtttat agttaaaaaa 2220
acaaacagaa acacaaacaa tttggatcaa aaggagaaaa tgataagtga caaaagcagc 2280
acaaggaatt tccctgtgtg gatgctgagc tgtgatggca ggcactgggt acccaagtga 2340
aggttccccg ggacatgagt ctgtaggagc aagggcacaa actgcagctg tgagtgcgtg 2400
tgtgtgattt ggtgtaggta ggtctgtttg ccacttgatg gggcctgggt ttgttctgtg 2460
ggctggaatg ctgggtatgc tctgtgacaa ggctacgtg acaatcagtt aaacacaccg 2520
gagaagaacc atttacctgc accttatatt tctgtgtaca catctattct caaagctaaa 2580
gggtatgaaa gtgcctgcct tgtttatagc cacttgtag taaaaatctt ttgtcatttt 2640
cacaaattat actttatata aggcattcca cacctaagaa ctagtttttg gaaatgtagc 2700
cctgggttta atgtcaaata aaggcaaaag gaattaaata atgtactttt ggctaaaaaa 2760
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 2802

```

<210> 4

<211> 473

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: [Deduced amino acid sequence of vitamin D receptor related

gamma-2 (VDRRg-2)]

<400> 4

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Met | Thr | Val | Thr | Arg | Thr | His | His | Phe | Lys | Glu | Gly | Ser | Leu | Arg | Ala |  |
| 1   |     |     |     |     | 5   |     |     |     | 10  |     |     |     |     | 15  |     |  |
| Pro | Ala | Ile | Pro | Leu | His | Ser | Ala | Ala | Ala | Glu | Leu | Ala | Ser | Asn | His |  |
|     |     | 20  |     |     |     |     |     | 25  |     |     |     |     |     | 30  |     |  |
| Pro | Arg | Gly | Pro | Glu | Ala | Asn | Leu | Glu | Val | Arg | Pro | Lys | Glu | Ser | Trp |  |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |  |
| Asn | His | Ala | Asp | Phe | Val | His | Cys | Glu | Asp | Thr | Glu | Ser | Val | Pro | Gly |  |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |  |
| Lys | Pro | Ser | Val | Asn | Ala | Asp | Glu | Glu | Val | Gly | Gly | Pro | Gln | Ile | Cys |  |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |  |
| Arg | Val | Cys | Gly | Asp | Lys | Ala | Thr | Gly | Tyr | His | Phe | Asn | Val | Met | Thr |  |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |  |
| Cys | Glu | Gly | Cys | Lys | Gly | Phe | Phe | Arg | Arg | Ala | Met | Lys | Arg | Asn | Ala |  |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     |     | 110 |     |  |
| Arg | Leu | Arg | Cys | Pro | Phe | Arg | Lys | Gly | Ala | Cys | Glu | Ile | Thr | Arg | Lys |  |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     |     | 125 |     |     |  |
| Thr | Arg | Arg | Gln | Cys | Gln | Ala | Cys | Arg | Leu | Arg | Lys | Cys | Leu | Glu | Ser |  |
|     |     | 130 |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |  |
| Gly | Met | Lys | Lys | Glu | Met | Ile | Met | Ser | Asp | Glu | Ala | Val | Glu | Glu | Arg |  |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |  |
| Arg | Ala | Leu | Ile | Lys | Arg | Lys | Lys | Ser | Glu | Arg | Thr | Gly | Thr | Gln | Pro |  |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |  |
| Leu | Gly | Val | Gln | Gly | Leu | Thr | Glu | Glu | Gln | Arg | Met | Met | Ile | Arg | Glu |  |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |
| Leu | Met | Asp | Ala | Gln | Met | Lys | Thr | Phe | Asp | Thr | Thr | Phe | Ser | His | Phe |  |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |
| Lys | Asn | Phe | Arg | Leu | Pro | Gly | Val | Leu | Ser | Ser | Gly | Cys | Glu | Leu | Pro |  |
|     |     |     |     |     |     | 210 |     | 215 |     |     | 220 |     |     |     |     |  |
| Glu | Ser | Leu | Gln | Ala | Pro | Ser | Arg | Glu | Glu | Ala | Ala | Lys | Trp | Ser | Gln |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Arg | Lys | Asp | Leu | Cys | Ser | Leu | Lys | Val | Ser | Leu | Gln | Leu | Arg | Gly | 245 | 250 | 255 |
| Glu | Asp | Gly | Ser | Val | Trp | Asn | Tyr | Lys | Pro | Pro | Ala | Asp | Ser | Gly | Gly | 260 | 265 | 270 |
| Lys | Glu | Ile | Phe | Ser | Leu | Leu | Pro | His | Met | Ala | Asp | Met | Ser | Thr | Tyr | 275 | 280 | 285 |
| Met | Phe | Lys | Gly | Ile | Ile | Ser | Phe | Ala | Lys | Val | Ile | Ser | Tyr | Phe | Arg | 290 | 295 | 300 |
| Asp | Leu | Pro | Ile | Glu | Asp | Gln | Ile | Ser | Leu | Leu | Lys | Gly | Ala | Ala | Phe | 305 | 310 | 315 |
| Glu | Leu | Cys | Gln | Leu | Arg | Phe | Asn | Thr | Val | Phe | Asn | Ala | Glu | Thr | Gly | 325 | 330 | 335 |
| Thr | Trp | Glu | Cys | Gly | Arg | Leu | Ser | Tyr | Cys | Leu | Glu | Asp | Thr | Ala | Gly | 340 | 345 | 350 |
| Gly | Phe | Gln | Gln | Leu | Leu | Leu | Glu | Pro | Met | Leu | Lys | Phe | His | Tyr | Met | 355 | 360 | 365 |
| Leu | Lys | Lys | Leu | Gln | Leu | His | Glu | Glu | Glu | Tyr | Val | Leu | Met | Gln | Ala | 370 | 375 | 380 |
| Ile | Ser | Leu | Phe | Ser | Pro | Asp | Arg | Pro | Gly | Val | Leu | Gln | His | Arg | Val | 385 | 390 | 395 |
| Val | Asp | Gln | Leu | Gln | Glu | Gln | Phe | Ala | Ile | Thr | Leu | Lys | Ser | Tyr | Ile | 405 | 410 | 415 |
| Glu | Cys | Asn | Arg | Pro | Gln | Pro | Ala | His | Arg | Phe | Leu | Phe | Leu | Lys | Ile | 420 | 425 | 430 |
| Met | Ala | Met | Leu | Thr | Glu | Leu | Arg | Ser | Ile | Asn | Ala | Gln | His | Thr | Gln | 435 | 440 | 445 |
| Arg | Leu | Leu | Arg | Ile | Gln | Asp | Ile | His | Pro | Phe | Ala | Thr | Pro | Leu | Met | 450 | 455 | 460 |
| Gln | Glu | Leu | Phe | Gly | Ile | Thr | Gly | Ser |     |     |     |     |     |     |     | 465 | 470 |     |